BREVIORA

Museum of Comparative Zoology

Cambridge, Mass. May 31, 1962 Number 159

AGE IN A SMALL SAMPLE OF BLUEFISH (*POMATOMUS SALTATRIX* (LINNAEUS))[1]

By Richard H. Backus

Woods Hole Oceanographic Institution and
Museum of Comparative Zoology

Little is known about the life-history of the bluefish (*Pomatomus saltatrix*) even though this long-known species is widely distributed in warm and temperate seas and is valuable for food and sport. Not only have the eggs and larval young of this interesting fish not been positively identified, but nothing exact is known of its rate of growth although the "annuli" on its scales prove to be quite easily read. Perhaps it is the great population fluctuations of this fish and its erratic appearance in many waters which have discouraged naturalists from studying it. Bigelow and Schroeder (1953) give a summary of what is known of bluefish life history. Little has been added since their account was written.

To learn something of the growth of the species, advantage was taken of the abundance of bluefish around Woods Hole during the autumn of 1961 and of the angling expertness of Asa Wing, Henry Cain, and Carl Grant, Jr. These men saved heads and scale samples together with records of fork length from the 34 fish that they caught between October 9 and 19 in Great Harbor at Woods Hole, in Woods Hole passage, and along the east shore of Buzzards Bay north of Woods Hole.

The saccular otolith of the bluefish has been figured by Le Gall (1934) and by Sanz Echeverría (1950). Le Gall (*op. cit.*) also figured the scales, and in another paper (1935) he said that his examination of the scales in North African specimens suggests that "young individuals attain their adult size and their first sexual maturity at the age of 4 or 5 years." On the other hand,

---

[1] Woods Hole Oceanographic Institution Contribution No. 1234

Borcea (1936) says of Black Sea bluefish: "During the second year they reach dimensions of 14-20 cm and can attain the first sexual maturity."

TABLE 1

Fork length and age in a small sample of bluefish.

Fork Length (inches)	Age (annuli)	Fork Length (inches)	Age (annuli)
13.9	I+	15.2	I+
14.0	I+	15.2	I+
14.0	I+	15.5	I+
14.0	I+	15.5	I+
14.0	? (I+ or II+)	15.5	I+
14.1	? (I+ or II+)	15.5	II+
14.1	I+	15.8	I+
14.2	I+	16.0	I+
14.2	I+	16.2	II+
14.4	I+	16.5	I+
14.5	I+	17.0	II+
14.5	I+	17.5	II+
14.8	I+	18.0	II+
15.0	I+	19.0	II+
15.0	II+	19.0	II+
15.0	? (I+ or II+)	20.1	II+
15.1	I+	24.0	III+

An otolith extracted from a specimen in our sample 14.4 inches in fork length measured about 0.45 by 0.15 inches. The otolith is much sculptured and does not seem suitable for use in age determination by simple visual inspection though it might be so suited if x-ray methods were used. Since the scales of this fish are large, and those examined by us seem to show the annuli rather clearly (Figure 1), we have relied on the scales alone for the ages reported here.

Fork length and age for the specimens in our sample are given in Table 1. Fork lengths were taken to the nearest eighth of an inch, were converted to decimals and rounded to the nearest tenth. Ages (expressed in annuli) were determined by examining at least 10 legible scales from each specimen. In three cases consistent results could not be obtained. Thus, age has been determined with some confidence in 31 instances. Of these, 21 specimens show an age of I+, nine an age of II+, and one an age of

III+. Specimens of age I+ range from 13.9 to 16.5 inches in fork length and have a mean length of 14.85 inches. Specimens of age II+ range from 15.0 to 20.1 inches and have a mean length of 17.48 inches. The sole III+ specimen measures 24.0 inches in fork length. Because of the small size of our sample these data can do little more than show that snappers (as small bluefish are called) of four to nine inches, seen in the autumn (Bigelow and Schroeder, 1953), are indeed young of the year and that such fish approximately double their length in the succeeding 12 months.

Bluefish left the Woods Hole area during the course of a five-day northeast storm which commenced on the evening of October 19 and lasted until the early hours of October 25. The last fish in our sample was caught on October 19. None were caught after the passage of the storm although the fishing effort continued and produced good catches of striped bass (*Roccus saxatilis*). Surface temperature records for Great Harbor, Woods Hole, show fluctuations between 64.9 and 64.5°F for the period October 6 to 12, a decline from 64.5 to 60.8°F from October 12 to October 19, the day the storm began, a decline from 60.8 to 55.0°F during the storm, and small fluctuations about 55°F for the remainder of the month. One may suppose that at about 60°F the bluefish were near the minimum temperature that they can tolerate at this stage of the life cycle and that the catastrophe of the storm, with the accompanying further drop in temperature, was enough to start them on the journey to their winter haunts.

LITERATURE CITED

BIGELOW, HENRY B. and WILLIAM C. SCHROEDER
1953. Fishes of the Gulf of Maine. U. S. Fish and Wildlife Service Fishery Bulletin, **74** (Volume 53): 1-577.

BORCEA, I.
1936. Notes sur la Biologie du Pomatome (Lufar) de la Mer Noire. C. R. Acad. Sci. Roumanie, **1**: 222-223.

LE GALL, JEAN
1934. Le Tassergall ou Bluefish (*Pomatomus saltatrix* Lacépède = *Temnodon saltator* Linné). Rev. Trav. Office Pêches Maritimes, **7**: 27-85.
1935. Le Tassergall ou Blue Fish. Bull. Soc. Sci. Nat. Maroc, **15**: 232-233.

SANZ ECHEVERRÍA, JOSEFA
1950. Notas sobre otolitos de peces procedentes de las costas del Sahara. Bol. Inst. Español Ocean., **27**: 1-14.

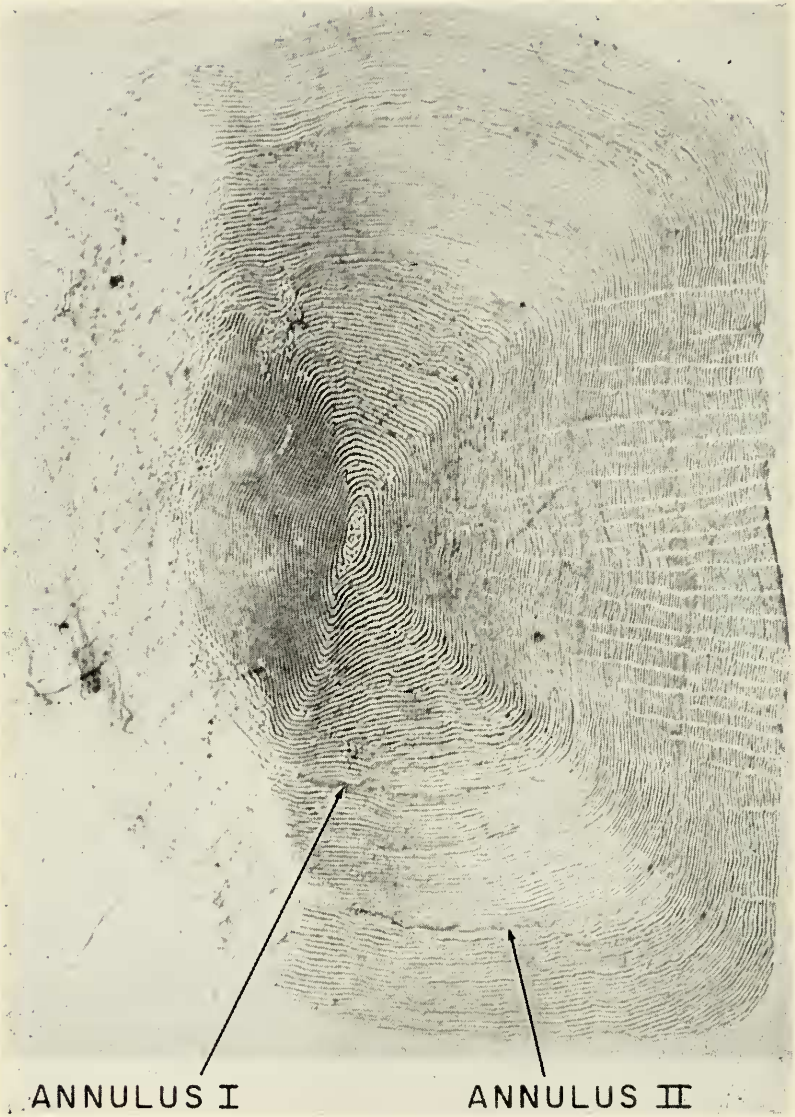

Fig. 1. Scale from a bluefish (*Pomatomus saltatrix*) 20.1 inches in fork length taken in Woods Hole passage on October 17, 1961, showing two annuli.